Remarks

1. Summary of Office Action

In the Office Action mailed July 24, 2007, the Examiner rejected claims 1-34 under 35 U.S.C. § 103(a) as being obvious over U.S. Patent Application Pub. No. 2003/0083024 (hereinafter "Richenstein") and U.S. Patent No. 5,388,124 (hereinafter "Laroia").

2. Amendments to the Claims

Applicants have amended various claims (*see* claim amendments above) to recite the invention more particularly and/or to make minor corrections.

Presently pending in this application are claims 1-34, of which claims 1, 9, 18, and 27 are independent and the remainder are dependent.

3. Response to §103 Claim Rejections

As noted above, the Examiner rejected claims 1-34 on grounds of obviousness over a combination of Richenstein and Laroia.

Applicants respectfully traverse the rejections of those claims, because the cited combination does not teach or suggest all of the claimed limitations, as would be required to establish a *prima facie* case of obviousness under M.P.E.P. § 2143.

For instance, independent claim 1, as amended above, recites a control unit for distributing multiplexed audio data over an optical network, the control unit comprising: (i) an audio sampler that samples a plurality of electrical signals from transducers and generates a plurality of raw audio data streams from the electrical signals, the audio sampler capable of sampling the electrical signals at a fraction of a frame synchronization rate (F_s) of the optical network; (ii) a microcomputer having an audio processor function and a multiplexer function, wherein the audio processor function processes the plurality of raw audio data streams to generate a single processed audio data stream from the plurality of raw audio data streams at the frame synchronization rate (F_S) of the optical network, *and wherein the multiplexer function multiplexes the plurality of raw audio data streams and the single processed audio data stream to generate a multiplexed audio data stream having a plurality of frames, each frame having a plurality of time division multiplexed channels wherein a first channel within each frame is assigned to transmit the plurality of raw audio data streams and a second channel within each frame is assigned to transmit the single processed audio data stream*; and (iii) an optical network interface that receives the multiplexed audio data stream from the microcomputer and generates an optical multiplexed audio data stream based on the multiplexed audio data stream from the microcomputer. (Emphasis added).

Independent claims 9, 18, and 27 recite similar limitations in various ways. Dependent claims 1-8, 10-17, and 28-34 each depend from claim 1, 9, 18, or 27, and thus necessarily include all of the limitations of respective independent claim 1, 9, 18, or 27).

Applicants respectfully submit that, at a minimum, the cited combination fails to disclose or suggest the claimed element of: a microcomputer having an audio processor function and a multiplexer function, wherein the audio processor function processes the plurality of raw audio data streams *to generate a single processed audio data stream from the plurality of raw audio data streams* at the frame synchronization rate (F_S) of the optical network, ***and wherein the multiplexer function multiplexes the plurality of raw audio data streams*** ***and*** ***the single processed audio data stream to generate a multiplexed audio data stream having a plurality of frames***, *each frame having a plurality of time division multiplexed channels* ***wherein a first channel within each frame is assigned to transmit the plurality of raw audio data streams and***

a second channel within each frame is assigned to transmit the single processed audio data stream.

Richenstein describes a wireless transmission device for communicating a plurality of audio streams to remote devices. In this regard, the transmission device comprises a signal combiner/multiplexer (e.g., one or more multiplexers) that combines the plurality of audio streams (e.g., four separate audio channels) to form a signal, and a transmitter connected to the combiner to transmit that signal for reception by a remote device. Further, the transmitter may include an infra-red light emitter for transmitting the signal as an infra-red light signal. (*See*, *e.g.*, Richenstein, Figures 1 and 6-7, claim 1, and paragraphs 0033-0041 and 0079-0082).

Thus, at best, Richenstein merely discloses a common arrangement in which multiple audio streams are multiplexed to form a single data signal.

Richenstein, however, fails to disclose or suggest any microcomputer multiplexer function that multiplexes a plurality of raw audio data streams ***and*** a single processed audio data stream generated from the plurality of raw audio data streams to generate a multiplexed audio data stream having a plurality of frames, each frame having a plurality of time division multiplexed channels wherein a first channel within each frame is assigned to transmit the plurality of raw audio data streams ***and*** a second channel within each frame is assigned to transmit the single processed audio data stream, as now claimed by Applicants.

Further, Applicants respectfully submit that Laroia fails to make up for the deficiencies in Richenstein with respect to the claimed invention. Laroia describes a precoding scheme for noise whitening on ISI channels that is compatible with trellis coding. But, like Richenstein, Laroia fails to disclose or suggest any system that functions in the manner presently claimed by Applicants and noted above.

As noted in Applicants' specification, in today's automotive environment, a vehicle optical network protocol may have a limit on a number of audio streams (or channels) that can be assigned to a control unit that transmits over an optical network. To illustrate, the MOST® optical network communication protocol has a limit of four independent audio streams (channels) that can be assigned to a control unit that transmits over the optical network. This limit is primarily due to limitations of current vehicle hardware interfaces (rather than the protocol itself) that restrict the number of synchronous audio channels that can be assigned to an in-vehicle control module (e.g., an optical hardware interface may only support four channels for transmission over an optical network).

Advantageously, the multiplexing method and system of the claimed invention allows a control unit to transmit a greater number of audio data over a limited number of existing channels. Further, present invention allows secondary audio units (such as a speech-to-text unit, voice recognition unit, a vehicle audio system, etc.) the flexibility to choose between receiving raw digital audio data streams from each transducer or a single processed audio data stream generated from the plurality of raw audio data streams from multiple transducers. The single processed audio data stream may be needed by some secondary audio processing units that do not have their own audio processing algorithms, such as a speech-to-text unit for instance.

4. Conclusion

In view of the foregoing, Applicants respectfully submit that pending claims 1-34 are in condition for allowance. Therefore, Applicants respectfully request favorable reconsideration and allowance of those claims.

Respectfully submitted,

Date: January 24, 2008 By: /Joanna Skyles/

Joanna Skyles
Reg. No. 54,454
Tel. No. 847-862-0274